DOCUMENT RESUME

ED 110 523 TM 004 798

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TITLE Pennsylvania's Preparing for a Changing World Instrument: A Validation Study.
PUB DATE [Apr 75]
NOTE 18p.; Paper presented at the Annual Meeting of the National Council on Measurement in Education (Washington, D.C., March 31-April 2, 1975)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS *Adjustment (to Environment); Adjustment Problems; *Educational Assessment; Elementary Secondary Education; Emotional Adjustment; Emotional Problems; Futures (of Society); Psychological Patterns; *State Programs; Suburban Schools; *Tests; *Test Validity; Withdrawal Tendencies (Psychology)
IDENTIFIERS *Pennsylvania Educational Quality Assessment; Preparing for a Changing World Instruments

ABSTRACT

The validities of the Pennsylvania Educational Quality Assessment (EQA) Preparing for a Changing World Instruments at grades 5, 8, and 11 were investigated. The study was carried out in a suburban school district where many students had experienced a great deal of change in their lives. At each grade level approximately 60 students who had experienced a great deal of change and 60 students who had experienced little change participated. Each student responded to the EQA instrument appropriate to his/her grade level. At each grade level teachers were asked to choose students high and low in "emotional fortitude." In investigating the validities of the instruments, EQA scores of students rated high were compared with those of students rated low. The study provided some evidence for the validity of the EQA instrument at each grade level. Validity support was gathered for the total instrument, for the Ineffective Solutions subtest, and for the Effective Solutions subtest; however, no validity support was found for the Emotional Adjustment subtest. In general, stronger validity support was found for the instruments when responded to by students who had experienced a great deal of change than when responded to by students who had experienced little change. (Author/BJG)

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PENNSYLVANIA'S PREPARING FOR A CHANGING WORLD INSTRUMENT: A VALIDATION STUDY

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Presented at the Annual Meeting of the
National Council on Measurement in Education

Washington, D.C.

March/April 1975

TM004 798

Summary

This study was performed as a means of investigating the validities of the Pennsylvania Educational Quality Assessment (EQA) Preparing for a Changing World Instruments at grades 5, 8 and 11. The study was carried out in a suburban school district where many students had experienced a great deal of change in their lives. At each grade level approximately 60 students who had experienced a great deal of change and 60 students who had experienced little change participated. Each student responded to the EQA instrument appropriate to his/her grade level. At each grade level teachers were asked to choose students high and low in "emotional fortitude." In investigating the validities of the instruments, EQA scores of students rated high were compared with those of students rated low.

The study provided some evidence for the validity of the EQA instrument at each grade level. Validity support was gathered for the total instrument, for the Ineffective Solutions subtest and for the Effective Solutions subtest. However, no validity support was found for the Emotional Adjustment subtest. In general, stronger validity support was found for the instruments when responded to by students who had experienced a great deal of change than when responded to by students who had experienced little change.

Introduction

In 1965 Pennsylvania's State Board of Education adopted 10 goals of quality education for the schools of the Commonwealth. These goals reflect a concern for both cognitive and noncognitive aspects of quality. They call for Pennsylvania's schools to help each child to: (1) acquire the greatest possible self esteem; (2) develop an understanding and appreciation of persons belonging to other social, cultural and ethnic groups; (3) achieve the highest possible mastery of the basic skills; (4) hold a positive attitude toward the learning process; (5) develop the habits and attitudes associated with responsible citizenship; (6) acquire good health habits; (7) have an opportunity to be creative in one or more fields of endeavor; (8) develop attitudes and knowledge leading to proper vocational development; (9) acquire the highest possible appreciation of human accomplishments; and (10) develop the ability to prepare for a world of rapid change.

In the years following this statement by the State Board of Education, the Pennsylvania Department of Education has developed or acquired instruments to measure each of these goals at grades 5, 8 and 11. These instruments are used in the statewide assessment program carried out by the Division of Educational Quality Assessment (EQA).

Many of the goals stated by the Board of Education are difficult to measure. One such goal is number 10, Preparing for a Changing World. The instruments developed to measure this goal were developed by the Department's Division of Educational Quality Assessment with major responsibility assumed by Nolan F. Russell.

The Preparing for a Changing World instruments were designed to measure students' abilities to adjust to frustrating situations, such as those brought on by a change in one's life. The frustrating situations were obtained from students in the instruments' developmental stages by asking them to describe events they had experienced which necessitated some form of adjustment and which were remembered as being difficult to deal with.

The instruments used in grades 5, 8 and 11 are similar in format, although the items included differ somewhat for each grade level. The grade 8 instrument contains 35 items; the instruments employed in the other two grade levels contain 40 items. Each instrument is made up of three subtests, Emotional Adjustment, Effective Solutions and Ineffective Solutions. Table 1 shows the most recent reliabilities obtained for the instruments.

In responding to the items of each instrument students are asked to indicate how they would react if they were placed in each of the frustrating situations included in the instrument. One such situation is, "My best friend told me that his/her dad was getting a job out of state and that they were moving." Listed under each situation are five ways students may react (e.g., looking for a new friend). The ways in which students may react are the items. Students respond to a four-point scale which depicts amounts of time they might spend pursuing each reaction. At grade 5 the scale is "a lot of time," "some time," "very little time" and "no time," and at grades 8 and 11 the scale is "a great deal of time," "some time," "very little time" and "no time." Each item is scored either from one to four or from four to one, depending on whether the reaction describes a favorable way to adapt to frustration or a way which is not favorable.

The three subtests making up each instrument depict three aspects of ability to adjust to frustrating situations. The Emotional Adjustment subtest examines the amount of time students would spend "being upset." The less time students would spend being upset, the higher they would score on the Emotional Adjustment subtest. The Effective Solutions subtest concerns the amount of time students would spend pursuing solutions which reflect positive adjustment. The more time students would spend pursuing solutions such as "working harder in school," the higher they would score on the Effective Solutions subtest. In contrast the Ineffective Solutions subtest concerns the amount of time students would spend avoiding the use of aggressive or

withdrawing reactions. The less time students would spend pursuing solutions such as "dropping out of school," the higher they would score on the Ineffective Solutions subtest.

Table 1

Reliabilities of the Educational Quality Assessment Preparing for a Changing World Instruments[1]

Subscale/ Total Scale	Grade 5		Grade 8			Grade 11		
	No. of Items	Internal Consis-tency	No. of Items	Internal Consis-tency	Test-Retest	No. of Items	Internal Consis-tency	Test-Retest
Effective Solutions	15	.75	13	.73	.63	15	.69	.77
Ineffective Solutions	17	.85	13	.82	.71	15	.68	.79
Emotional Adjustment	8	.79	9	.74	.68	10	.65	.75
Total Scale	40	.84	35	.83	.79	40	.70	.84

[1]At each grade level internal consistency reliabilities were computed using the responses of approximately 3,500 students, randomly drawn from the students participating in an assessment of one-third of the school districts in the state. Test-retest reliabilities were computed using responses from approximately 400 8th grade and 400 11th grade students from a suburban school district. The interval between testings was 4 1/2 weeks.

Methodology

Theoretical Framework

The approach taken in the validation study of the EQA Goal X instruments was a concurrent one, providing information on how well scores on the instruments related to measures of student behaviors. A second purpose for carrying out the study was to help define more fully for school district personnel the types of behaviors to be expected from students obtaining the highest and lowest scores on the instruments.

In the study a measure of "emotional fortitude" was employed. Validity support for the Goal X instruments and for their subtests would be found if EQA scores were found to relate to "emotional fortitude."

A measure of the amount of change experienced by students was also taken in order to acquire additional information about the Goal X instruments. The question addressed was whether the instruments had similar validities for students who had experienced a great deal of change in their lives and for students who had experienced little change. It was possible that, since students who had experienced change would have faced situations similar to those included in the EQA instruments, their predictions of their own behaviors would be more accurate than would be those of students who had experienced little change.

Design of the Study

In the spring of 1974 all students participating in the study were asked to respond to the EQA Goal X instrument appropriate to their grade level. Information on two criterion measures was also gathered at this time. The two criterion measures were teacher ratings of students on emotional fortitude and school records indicating whether or not students had experienced change in their lives. School records were examined by counselors at grades 8 and 11 and the information was provided by classroom teachers at grade 5 (copies of the criterion measures are included in the Appendix).

The Teacher Rating Exercise described emotional fortitude as a trait having the following components:

I. The ability to recover from a serious emotional setback, such as the death of a parent.

II. The ability to confront difficult obstacles which must be overcome.

III. The ability to discipline and direct one's own behavior in order to achieve a goal.

A list of each teacher's students was included at the bottom of the form. The teachers were instructed to select only those students whom they considered to be outstandingly

low or high on the trait. Students were rated only by teachers by whom they had been taught during most of the school year. For grades 8 and 11 many teachers had contact with only a small proportion of the students in the study. Therefore, at these grade levels students were assigned to either the low or the high group if they were rated in this way by at least one teacher and if no other teacher rated them as candidates for the opposite group. In grade 5, of course, only one teacher rated each pupil. Students who were not rated low or high were assigned to the middle group.

The Criteria for Selecting the Change and the Non-Change Groups instrument was a survey form designed to be completed by school counselors about students assigned to them. The instrument consisted of an instruction page and two data forms. One data form consisted of students selected by counselors for the change group and the other form consisted of those selected for the nonchange group. Listed above the columns of the data form for the change groups were the criteria for change. These included criteria such as death in the immediate family and residential movements resulting in a change of school. The appropriate columns were checked for each student listed. The data form for the nonchange group consisted only of a column for listing names and a column for comments.

Sample

The sample consisted of 103 5th graders, 113 8th graders and 94 11th graders selected from a suburban Pennsylvania school district where many students had experienced change in their lives. This "high change" district was selected through examinations of 1970 census data, looking at such factors as divorce and separation rates, per cent of population who changed addresses and per cent of population under 18 living with one parent or neither parent.

Results

The principal analyses of the study focused upon students assigned to the low and high emotional fortitude groups by teachers. At each grade level these groups were compared on the Goal X instrument and subtests. For all analyses it was assumed

that those assigned to the high emotional fortitude group should score higher than those assigned to the low group. The results of the independent t-tests are reported in Table 2. The means entering into these tests are included in the Appendix.

Table 2

t-Values Computed Between the High and Low Emotional Fortitude Groups on the Goal X Tests

	Grade 5			Grade 8			Grade 11		
	Change Group	Non-Change Group	Change & Non-Change Groups	Change Group	Non-Change Group	Change & Non-Change Groups	Change Group	Non-Change Group	Change & Non-Change Groups
Total	.86	2.52*	1.06	2.65**	-.52	1.09	.92	-.30	.26
Emot. Adj.	- .40	1.28	.37	1.67	-.49	.88	-1.25	-.30	-1.18
Effec. Sol.	1.71*	.11	.80	.95	-.09	.50	2.42**	-.75	1.49
Ineffec. Sol.	.39	2.73**	1.07	2.48*	-.55	.96	.56	.52	.75
Total minus Emot. Adj.	1.30	2.20*	2.34*	1.87*	-.41	.84	1.61*	-.20	1.35
N[1] =	22	16	38	26	18	44	41	24	71

*Significant at the .05 level
**Significant at the .01 level

[1]For each column the N listed represents the total number of students, including both low and high rated students, involved in the analyses for that column.

Validity support was found for the total test and the Ineffective Solutions subtest at grades 5 and 8, and the Effective Solutions subtest at grades 5 and 11. The Emotional Adjustment subtest did not receive any validity support. In fact, the findings suggested that the Emotional Adjustment subtest had impaired the validity of the total test. Whereas two significant t-values were reported for the total test, four were reported for the total test minus the Emotional Adjustment subtest.

As was anticipated as a possibility, stronger validity support was found for the instruments when responded to by students who had experienced change than when responded to by students who had experienced little change. The validity support found was strongest at grade 5, less strong at grade 8 and weakest at grade 11.

Examination of Student Reactions to the EQA Instruments

As a means of investigating students' general impressions of the EQA instruments, grade 8 and 11 students who had responded to the instruments were asked to write answers to the following two questions: (1) Did you feel that you knew yourself well enough to predict what you would do in the situations?, and (2) Did you have any difficulty placing yourself in any of the situations? If so, please describe them.

The results found for question 1 provided validity support both for the EQA instruments and for self-report measurement in general. The overwhelming majority of students (92 per cent in grade 8 and 89 per cent in grade 11) felt confident that they were capable of predicting how they would actually react if confronted by the situations reflected in the EQA instruments.

In answering question 2 only a few students at each grade level indicated that they had difficulty in placing themselves in all of the situations of the instruments. However, at both grade levels many students had difficulty with one or more situations (32 per cent of grade 8 students and 66 per cent of grade 11 students had difficulty with at least one situation). In examining student explanations about the situations which caused difficulty, one consistent result was found. At both grade 8 and grade 11 about one-fourth of the students had difficulty placing themselves in a situation in which a student was punished for smoking on school grounds. Students experiencing difficulty with this situation felt that, since they themselves would never smoke, it was difficult to relate to the situation. Perhaps because of the campaign being waged in this country to inform the public of the health hazards of smoking, the situation is becoming less relevant to students' lives than it was when originally tried out.

Discussion and Conclusions

Overall, some validity support was gathered at each grade level for the EQA instruments. It cannot be said, however, that the results of the study were overwhelmingly positive. There, first of all, appeared to be one subtest, the Emotional Adjustment subtest, which impaired the validities of the instruments. Also, for none of the three grade levels was validity support gathered for the total instrument when responded to by both change and nonchange groups. Rather, at grades 8 and 11 no validity support was obtained for the instruments when responded to by students who had experienced little change in their lives.

One reason the study employed change and nonchange groups was to test for just such an occurrence. The instruments call for students to predict how they will react in a variety of situations. If they have never experienced situations similar to these it may be difficult for them to be accurate in their predictions and the validities of the instruments may suffer because of this.

One source of error in the study was the difficult rating task required of teachers. The strongest validity support for the instruments was gathered at grade 5. This result may in part be due to the fact that, since teachers of grade 5 students had more contact with their students than did teachers of grade 8 and grade 11 students, their ratings of the emotional fortitude of their students were the most accurate of those obtained in the study. Also, the finding of stronger validity support for the instruments when responded to by change group students than when responded to by nonchange group students may in part be due to the abilities of teachers to rate change group students more accurately. Students who have experienced change should reflect, in their day-to-day behaviors, their past abilities to deal with it. Those who have responded poorly would be expected to be weakened by it; those who have responded well would be expected to be strengthened.

Thus, the study described should be viewed as one attempt to assess the validities of instruments designed to measure a rather nebulous area. Other validation studies of Pennsylvania's Preparing for a Changing World instruments and of smiliar instruments should be undertaken both to gather information about their validities and to help develop increasingly sophisticated methods for assessing the validities of such instruments.

Appendix

Criteria for Selecting the "Change" and the "Non-Change" Groups

In order to validate EQA's Goal X instrument, "preparation for a rapidly changing world," two groups will be defined on the basis of change experience. The "change" group will include students who have experienced change in their lives, and the "non-change" group will include students who have not. We seek 60 students for each of the two groups. These two groups will be formed at three grade levels to result in a total of 360 students. The three grade levels will be grades 5, 8, and 11.

The criteria for selecting the "change" groups will include students who have experienced:

(1) death in their immediate families,
(2) the divorce of their parents,
(3) the separation of their parents,
(4) one or more residential movements resulting in a school change,* and/or
(5) any other experiences significant enough to change students' lives.

The criteria for selecting the "non-change" groups will include students who have not experienced any of the above situations. No other criteria should be employed.

In order to determine how the EQA test scores relate with change experience and emotional fortitude, we will need to know the names of the students.

Also, we must know which criteria are used in assigning each student into the "change" groups. For example, an eleventh grade student named John Doe was selected because his parents were divorced, and because he experienced two residential movements.

Please enter the requested information on the enclosed data forms. One set of data forms is for the "change" group and the other is for the "non-change" group. In selecting students into the "change" group, please select those who have experienced the <u>most</u> change as defined by the 5 criteria.

* If only one residential movement is noted for a given student, it should not be included unless it occurred within the past two years.

Data Form for the "Change" Group (For Grade 11) School*_____

DIRECTIONS: Under the appropriate columns please indicate the number of times that each event occurred. Whenever possible also indicate the approximate date of each event.

Name	Death in the Immediate Family		Divorce	Separation of Parents	Residential Movements Resulting in a School Change		Other Change Experiences	Comments	Homeroom Teacher
	Parents	Brothers and Sisters			Number of Moves	Date of Last Move			

* If the assigned school is not the same for all students please indicate under the "Comment" column.

Data Form for the "Non-Change" Group (For Grade 11) School*_____

DIRECTIONS: List the students who have not experienced change as defined by the 5 criteria used in selecting the "Change" groups.

Name	Comments

* If the assigned school is not the same for all students please indicate under the "Comments" column.

Teacher Rating Exercise

We would like you to consider your students in regard to emotional fortitude. This is the trait of inward strength and maturity that enables individuals to endure substantial external and internal pressures. Following are three components of emotional fortitude:

I. The ability to recover from a serious emotional setback, such as the death of a parent.

II. The ability to confront difficult obstacles which must be overcome.

III. The ability to discipline and direct one's own behavior in order to achieve a goal.

Attached is a list of students assigned to you. Consider only those students who are outstandingly high or low on one or more of the characteristics. Place a letter "H" beside those you consider to be outstandingly high; and place a letter "L" beside those you consider to be outstandingly low.

In the example below, students who are outstanding in regard to one or more components of emotional fortitude have been identified.

Example:

Atkinson, Doris		Rice, Linda	L
Baker, Thomas	L	Thomas, Henry	
Carter, Theodore		Vaughn, Barbara	
Fot, Mary	H	Watson, Oliver	H
Mulphy, Sara			
Parker, Samuel			

The remaining students are neither outstandingly high nor outstandingly low in regard to emotional fortitude.

If any of these students are not assigned to you please cross them off the list.

Table 3

Means Entering Into Comparisons Between High and Low Groups

Subscale/ Total Scale	Grade 5						Grade 8					
	Change Group		Nonchange Group		Total Group		Change Group		Nonchange Group		Total Group	
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
Total Scale	131.17	126.50	132.73	116.80	131.91	123.27	109.08	97.38	91.92	94.83	101.40	97.11
Emot. Adj.	19.17	20.50	20.00	14.60	19.57	19.20	23.85	20.62	19.75	20.67	21.88	20.63
Effec. Sol.	50.08	46.20	50.27	49.60	50.17	47.33	39.15	36.31	34.25	34.50	36.80	35.74
Ineffec. Sol.	62.25	59.80	62.36	52.60	62.30	57.40	46.08	40.46	37.92	39.67	42.16	40.21
Total minus Emot. Adj.	112.00	106.00	112.64	101.60	112.30	104.53	85.23	76.77	72.17	74.17	78.96	75.95

	Grade 11					
	Change Group		Nonchange Group		Total Group	
	High	Low	High	Low	High	Low
Total Scale	113.67	109.26	113.62	115.27	113.43	112.47
Emot. Adj.	23.50	25.39	23.15	23.91	23.38	24.91
Effec. Sol.	43.54	38.52	43.92	46.18	43.68	41.00
Ineffec. Sol.	46.63	45.35	46.54	45.18	46.59	45.29
Total minus Emot. Adj.	90.25	83.87	90.46	91.36	90.32	86.29